What is claimed is:

1. A method for determining number of a frame in a sequence of two or more frames, the method comprising:

receiving a sequence of at least M+1 consecutive OFDM frames, each frame having an index m, having a designated preamble and having a selected length N1 and an associated pseudo-noise signal PN(t;m) ($m = 0, \ldots, M; M \geq 1$);

providing an overlap function OF(m;k) of the designated preambles with each of a sequence of selected reference signals, indexed by $k = 1, 2, \ldots, K$ where K is a selected integer, and determining a phase $\phi(m)$ corresponding to a location of a maximum amplitude of the overlap functions OF(m;k) for each of the M+1 designated preambles;

forming a selected Mth order phase difference of the phases $\phi(m)$; and

comparing the Mth order difference with a selected table of Mth order phase differences to determine a frame number of at least one of the M+1 frames.

2. The method of claim 1, further comprising choosing M = 1 and choosing said first-order phase difference to be $\Delta_1(m) = \phi(m+1) - \phi(m)$.

3. The method of claim 1, further comprising choosing M = 3 and choosing said first-order phase difference to be $\Delta_3(m) = \phi(m+3) - 3\phi(m+2) + 3\phi(m+1) - \phi(m)$.

4. The method of claim 1, further comprising choosing M to be an odd integer.

5. The method of claim 1, further comprising forming a linear combination

$$LC(m) = \sum_{p=1}^{P} c(p) \cdot \Delta_p(m) \qquad (P \geq 2),$$

where c(p) are selected coefficients, at least one of which is non-zero; and

comparing the linear combination value LC(m) with a selected table of linear combination values to determine a frame number of at least one of the M+1 frames.

6. The method of claim 1, further comprising providing at least two of said pseudo-noise signals, PN(t;m1) and PN(t;m2), as translations of each other through a relation $PN(t;m2) = PN(t + \Delta t(m1,m2);m1)$, where $\Delta t(m1,m2)$ is a selected time difference depending upon at least one of said indices m1 and m2.

7. The method of claim 1, further comprising:

computing a first order sum $\Sigma_1(m) = \phi(m+1) + \phi(m)$ for at least one index number m; and

when the sum $\Sigma_1(m)$ is not equal to at least one of the numbers +1 and -1, adjusting a value of at least said phases $\phi(m)$ and $\phi(m+1)$ so that the sum $\Sigma 1(m)$ is equal to one of the numbers +1 and -1.

8. The method of claim 1, further comprising choosing at least one of said selected reference signals to be an m-sequence.

9. A system for determining number of a frame in a sequence of two or more frames, the system comprising a computer that is programmed:

to receive a sequence of at least M+1 consecutive OFDM frames, each frame having an index m, having a designated preamble and having a selected length N1 and an associated pseudo-noise signal PN(t;m) ($m = 0, \ldots, M$; $M \geq 1$);

to provide an overlap function OF(m;k) of the designated preambles with each of a sequence of selected reference signals, indexed by $k = 1, 2, \ldots, K$ where K is a selected integer, and to determine a phase $\phi(m)$ corresponding to a location of a maximum amplitude of the overlap functions OF(m;k) for each of the M+1 designated preambles;

to form a selected Mth order phase difference of the phases $\phi(m)$; and

to compare the Mth order difference with a selected table of Mth order phase differences to determine a frame number of at least one of the M+1 frames.

10. The system of claim 9, wherein said integer M is chosen equal to 1 and said first-order phase difference is chosen to be $\Delta_1(m) = \phi(m+1) - \phi(m)$.

11. The system of claim 9, wherein said integer M is chosen to be 3 and said first-order phase difference is chosen to be $\Delta_3(m) = \phi(m+3) - 3\phi(m+2) + 3\phi(m+1) - \phi(m)$.

12. The system of claim 9, wherein said integer M is chosen to be an odd integer.

13. The system of claim 9, wherein said computer is further programmed:

to form a linear combination

$$LC(m) = \sum_{p=2}^{P} c(p)\cdot\Delta_p(m) \qquad (P\geq 2),$$

where c(p) are selected coefficients, at least one of which is non-zero; and

to compare the linear combination value LC(m) with a selected table of linear combination values to determine a frame number of at least one of the M+1 frames.

14. The system of claim 9, wherein said computer is further programmed to provide at least two of said pseudo-noise signals, PN(t;m1) and PN(t;m2), as translations of each other through a relation PN(t;m2) = PN(t + Δt(m1,m2);m1), where Δt(m1,m2) is a selected time difference depending upon at least one of said indices m1 and m2.

15. The system of claim 9, wherein said computer is further programmed:

to compute a first order sum $\Sigma_1(m) = \phi(m+1) + \phi(m)$ for at least one index number m; and

when the sum $\Sigma_1(m)$ is not equal to at least one of the numbers +1 and -1, to adjust a value of at least said phases $\phi(m)$ and $\phi(m+1)$ so that the sum $\Sigma_1(m)$ is equal to one of the numbers +1 and -1.

16. The system of claim 9, wherein at least one of said selected reference signals is chosen to be an m-sequence.